KYANITE AND RELATED MINERALS

(Data in thousand metric tons, unless otherwise noted)

<u>Domestic Production and Use:</u> One firm in Virginia, with integrated mining and processing operations, produced kyanite from hard-rock open pit mines. One company produced synthetic mullite in Georgia. It was estimated that 90% of the kyanite-mullite output was used in refractories: 55% for smelting and processing ferrous metals, 20% for nonferrous metals, and 15% for glassmaking and ceramics. Nonrefractory uses accounted for the remainder.

Salient Statistics—United States:	<u> 1995</u>	<u> 1996</u>	<u> 1997</u>	<u> 1998</u>	<u>1999</u> °
Production: Mine	W	W	W	^e 90	90
Synthetic mullite	W	W	W	e39	39
Imports for consumption (andalusite)	3	11	8	10	10
Exportse	35	35	35	35	35
Shipments from Government stockpile excesses	_	_	1		_
Consumption, apparent	W	W	W	^e 104	104
Price, average, dollars per metric ton:					
U.S. kyanite, raw	144	154	154	157	158
U.S. kyanite, calcined	248	262	262	267	268
Andalusite, Transvaal, South Africa, 57.5% Al ₂ O ₃	190	190	190	190	200
Andalusite, Transvaal, South Africa, 59.5% Al ₂ O ₃	210	230	230	230	225
Stocks, producer	NA	NA	NA	NA	NA
Employment, kyanite mine and plant, number ^e	150	150	150	150	150
Net import reliance ¹ as a percent of					
apparent consumption	Е	Е	Е	Е	Е

Recycling: Insignificant.

Import Sources (1995-98): South Africa, 100%.

Tariff:ItemNumberNormal Trade Relations
12/31/99Andalusite, kyanite, and sillimanite2508.50.0000Free.Mullite2508.60.0000Free.

Depletion Allowance: 23% (Domestic), 15% (Foreign).

Government Stockpile:

Stockpile Status—9-30-99²

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1999	Disposals FY 1999
Kyanite, lump	0.1	_	0.1	_	_

KYANITE AND RELATED MINERALS

Events, Trends, and Issues: An andalusite-producing company in South Africa reportedly was sold to another South African producer of the mineral. The sale included the world's largest andalusite mine, with a production capacity of 120,000 tons per year. This will mean that there are now only two producers in South Africa.

The iron and steel industry continued to be the largest consumer of refractories in general; in the latter part of 1999 there was a world surplus of steel, according to the International Iron and Steel Federation. Even in times of activity and growth in the user industries, strong international competition exists among refractory suppliers to extend the useful life of the materials they provide.

The trend toward monolithic refractories was expected to continue. In Japan, monolithics comprise 60% of the annual refractories production. Monolithics are cheaper and easier to install than bricks and shapes.

World Mine Production, Reserves, and Reserve Base:							
	Mine pro	oduction	Reserves and reserve base ³				
	<u>1998</u>	<u>1999</u> °					
United States	^e 90	90	Large in the United States and South Africa;				
France	45	45	may be large in other countries.				
India	14	15					
South Africa	250	250					
Other countries	8	_10					
World total	407	410					

<u>World Resources</u>: Large resources of kyanite and related minerals are known to exist in the United States. The chief resources are in deposits of micaceous schist and gneiss mostly in the Appalachian area and in Idaho. Other resources are in aluminous gneiss in southern California. These resources are not economical to mine at present, but some may be eventually. The characteristics of kyanite resources in the rest of the world are thought to be similar to those in the United States.

<u>Substitutes</u>: Two types of synthetic mullite (fused and sintered), superduty fire clays, and high-alumina materials are substitutes for kyanite in refractories. Principal raw materials for synthetic mullite are bauxite, kaolin and other clays, and silica sand.

^eEstimated. E Net exporter. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹Defined as imports - exports + adjustments for Government and industry stock changes.

²See Appendix B for definitions.

³See Appendix C for definitions.